

## An Update on a Chitosan/Copper Treatment for the Control of Potato Late Blight

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Potato late blight was kept in check for many years with systemic fungicides. Because of the build-up of metalaxyl resistance in some strains of *Phytophthora infestans*, the causal agent of potato late blight, surface contact fungicides have become the back-up. Most of these fungicides give adequate protection if they are in place at the time the pathogen spores arrive to the plant leaf. This situation requires almost weekly application and vigilance in detecting the onset of the pathogen. Epidemics can be prevented if all growers are vigilant, however growers aiming for the organic market have less control options and are becoming dependent on copper compounds, since chemically synthesized fungicides are not approved by the National Organic Program. Further, when inert ingredients accompanying some copper preparations are not approved, the copper formulation cannot be approved. The fall out of this is that in years optimal for late blight, unprotected or poorly protected potato crops can be a source of inoculum for neighboring fields. The objective of our work has been to obtain an effective treatment to protect the organic plantings, and to provide an economical treatment that can be alternated or interspersed with conventional fungicide applications.

Since *Phytophthora infestans* is more closely related to algae than to most fungi, a potent algaecide that is used for spas, pools, etc. was combined with very low levels of chitosan, which serves as a sticker. A series of tests with the US #8 strain of *Phytophthora infestans*, using plants sprayed in field plots and/or in the greenhouse, indicates this combination approaches the efficacy of some standard fungicides. Two different organic grower-cooperators have sprayed observation plots in both irrigated and high rainfall areas (with temporary permits for experimental use), and have obtained low infection rates similar to those obtained with greenhouse-grown plants. Efforts are currently underway for permanent clearance for the use of this treatment so that larger areas can be planted and observed. The current cost of the combined treatment is less than 1 dollar per acre. This reflects the lower application rate, which is about 1/40<sup>th</sup> that recommended for other copper-containing fungicides. Plans for grower-cooperator trials on larger acreages are being formulated. Packets of the two ingredients, along with application instructions, are being prepared for free trials for any grower interested. Because of the narrow window of successful rates of application, this treatment cannot be applied via chemigation.

For further information and arrangements for cooperator trials, contact Lee Hadwiger (509-335-3751; [chitosan@wsu.edu](mailto:chitosan@wsu.edu)).